

French-Swedish Workshop on Smart cities and mobility,
11th & 12th June 2019, ESIEE, Cité Descartes

What's new in research and innovation on smart city logistics? French and Swedish points of view

Laetitia Dablanc & Ivan Sanchez-Diaz



- Laetitia Dabanc, urban planner, Director of research at IFSTTAR/Univ of Paris-East, former visiting professor at University of Gothenburg, member of VREF Metrofreight Center of Excellence
- Ivan Sanchez-Diaz, Senior Lecturer and Researcher at Chalmers University of Technology in Sweden, member of VREF Urban Freight Platform

Changes in city logistics

- Global supply chains, technological changes, consumers' behavior
- Making cities adopt new - and converging – logistics operations around the world



'Instant delivery' services

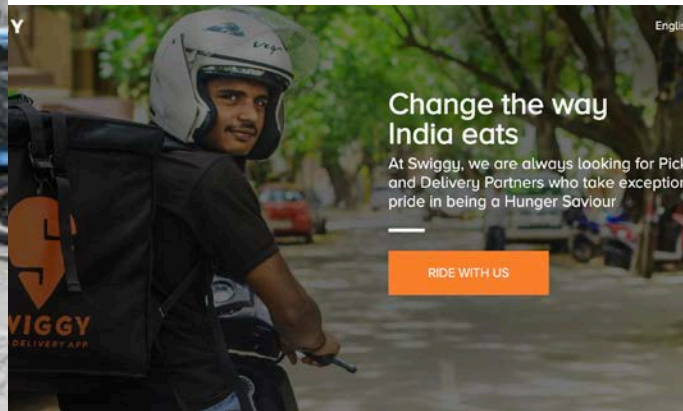
(Dablanc, Morganti, Arvidsson, Woxenius, Browne, Saidi, 2017)

- Smartphones and digital platforms
- Gig workers, self contractors

Paris

Gothenburg

Mumbai



Global and regional players

- Prologis, DHL, Amazon providing services worldwide
- IFood, Deliveroo, JD, WeChat extending out of their original place
- Competition growing

amazon

Prime now



Alibaba.com

New logistics landscapes around major cities

Gothenburg



Paris



Los Angeles



Gothenburg: a Scandinavian gateway, with rapid residential development



Research and innovation on smart city logistics- A Swedish perspective



1. Smart and sustainable city logistics



2. Efficient and connected freight systems



3. Smart solutions to urbanization challenges

1. Smart and sustainable city logistics

- Electrified distribution trucks for “ultra low emission zones”
 - Driving range prediction for medium duty electric vehicles and decide partial charging (machine learning)- (*ElForT project*)
 - New business models: shifting deliveries to nights or early mornings, indoor stores and terminals- (*Off-peak hours distribution project*)



Source: Volvo Trucks



Source: Scania

1. Smart and sustainable city logistics

- Shifting urban freight to more sustainable modes
 - Policy, infrastructure and logistics needs for multi-modal transport chain including cargo bikes, barges, and electric vehicles (*DenCity project*)
 - Urban consolidation centers and small electric vehicles: the business model challenge (*DenCity project*)



Cities
Cities in motion

The innovative delivery system transforming Gothenburg's roads

It's a simple idea. The Swedish city's *Stadsleverans* system pools deliveries for 500 shops and businesses - drastically reducing shopping centre traffic and freeing up once-congested streets for pedestrians and cyclists



CHALMERS

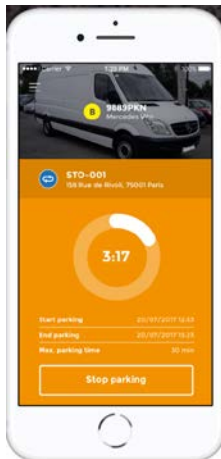
2. Efficient and connected freight systems

- Efficient traffic management in ring roads
 - Give access to freight vehicles to bus lanes can bring benefits- (*Ringroads logistics project*)
 - Which freight movements should be given priority and how to control access to it?
 - Design the IT system for access control- (*NordicWay2*)



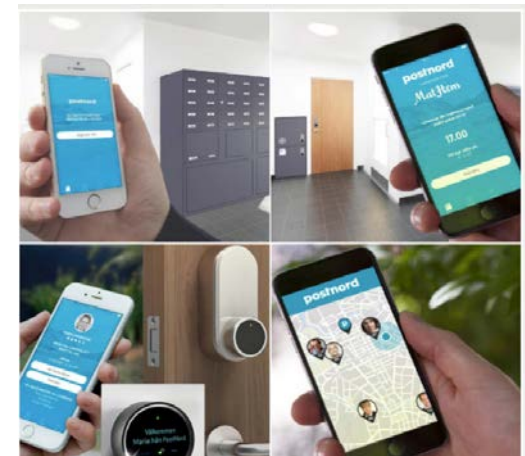
2. Efficient and connected freight systems

- Digitalizing the use and control of (un)loading zones
 - Using data analytics to enhance the efficiency of loading zones use and control (*Loading zones data analytics project*)
 - How will different IT systems affect logistics operators and other users



3. Smart solutions to urbanization challenges

- Integrating goods and passenger mobility
 - Including freight in urban planning (*DenCity project*)
 - Decreasing vehicle ownership and its effects on urban freight
- Smart last mile services
 - Parcel boxes in premises of new apartments, boxes in apartment front doors or access to apartments with codes (*Dencity project*)
 - Real-time communication to re-route deliveries to the convenience of receiver, e.g., trunk of car



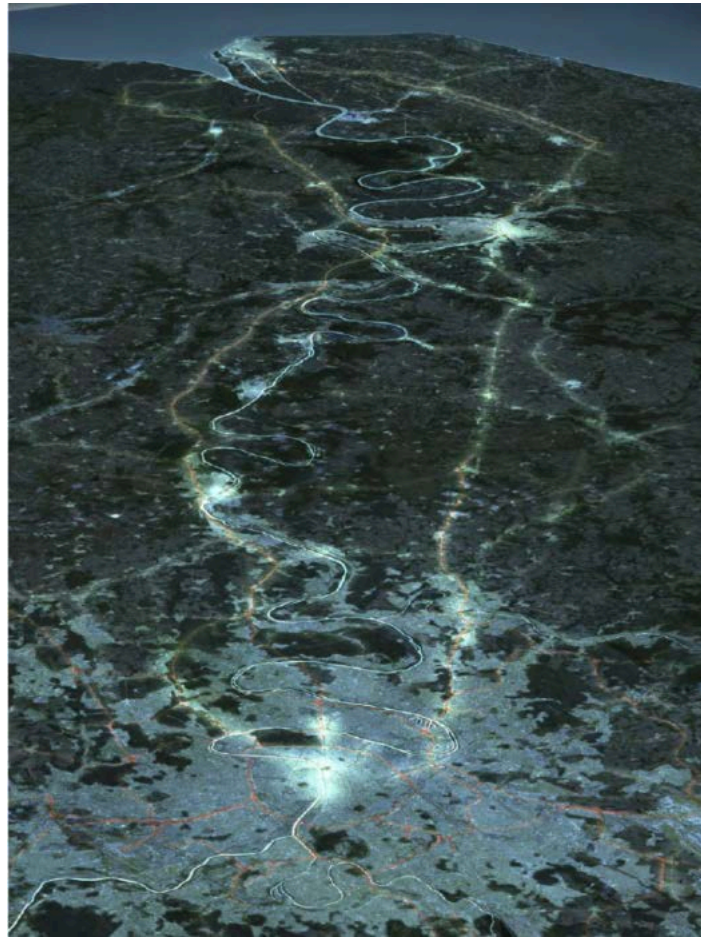
Source: Postnord- DenCity report

CHALMERS

Conclusion

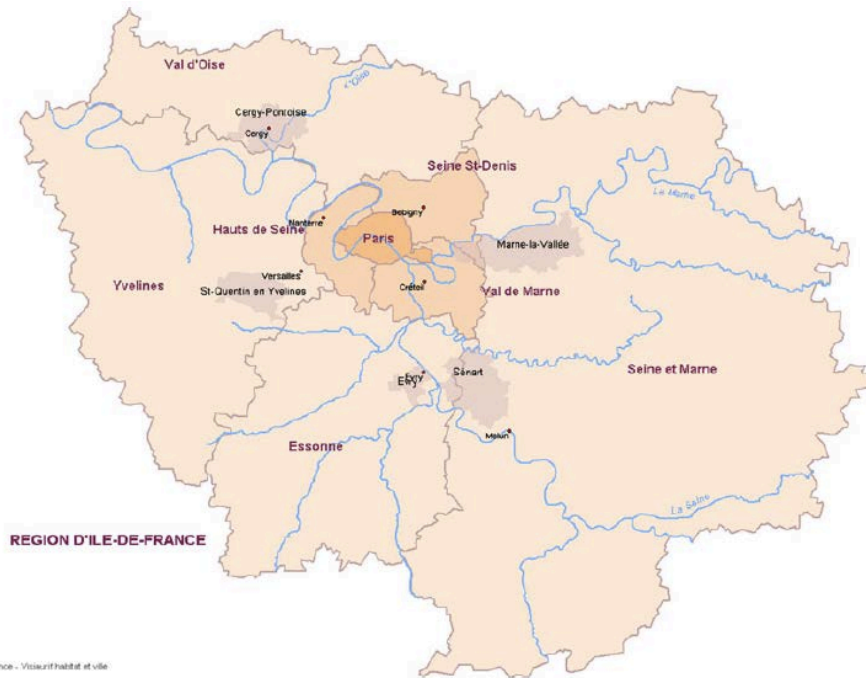
- Urban freight is at the core of several of Sweden's research priorities: sustainability, digitalization and automation, and quality of life
- Several smart solutions aim at alleviating the challenges that come with e-commerce and residential deliveries
- A lot of research is taking place under the form of Living Labs with multi-stakeholder collaboration, knowledge sharing and co-creation
- Technology is being developed at a very fast pace, but some business models, operational questions and policy to utilize this technology is still unclear
- The 4th Industrial Revolution brings digitalization, internet of things and big data. Ironically, lack of data continues to be one of the main challenges when conducting city logistics research

Paris: a world city, a logistics gateway,
a smart logistics innovator, but a very
complex institutional framework



Paris

A city of 2.2 millions
An urban region of 12 millions
1,300 municipalities



DIJON Ile-de-France - Visiter l'hôtel et ville

- One million B2B deliveries every day in the region (LAET)
- 500,000 B2C deliveries every day (est.)
- 12% Parisians use a food app at least once a week (6T, 2018)
- +2000 delivery self-contractors registered in France every month in 2018 (Insee)



Amazon Prime
Now in the City of
Paris



Electric vans from Star's
Service

Too much pollution from freight

Paris chokes on pollution; City of Light becomes City of Haze



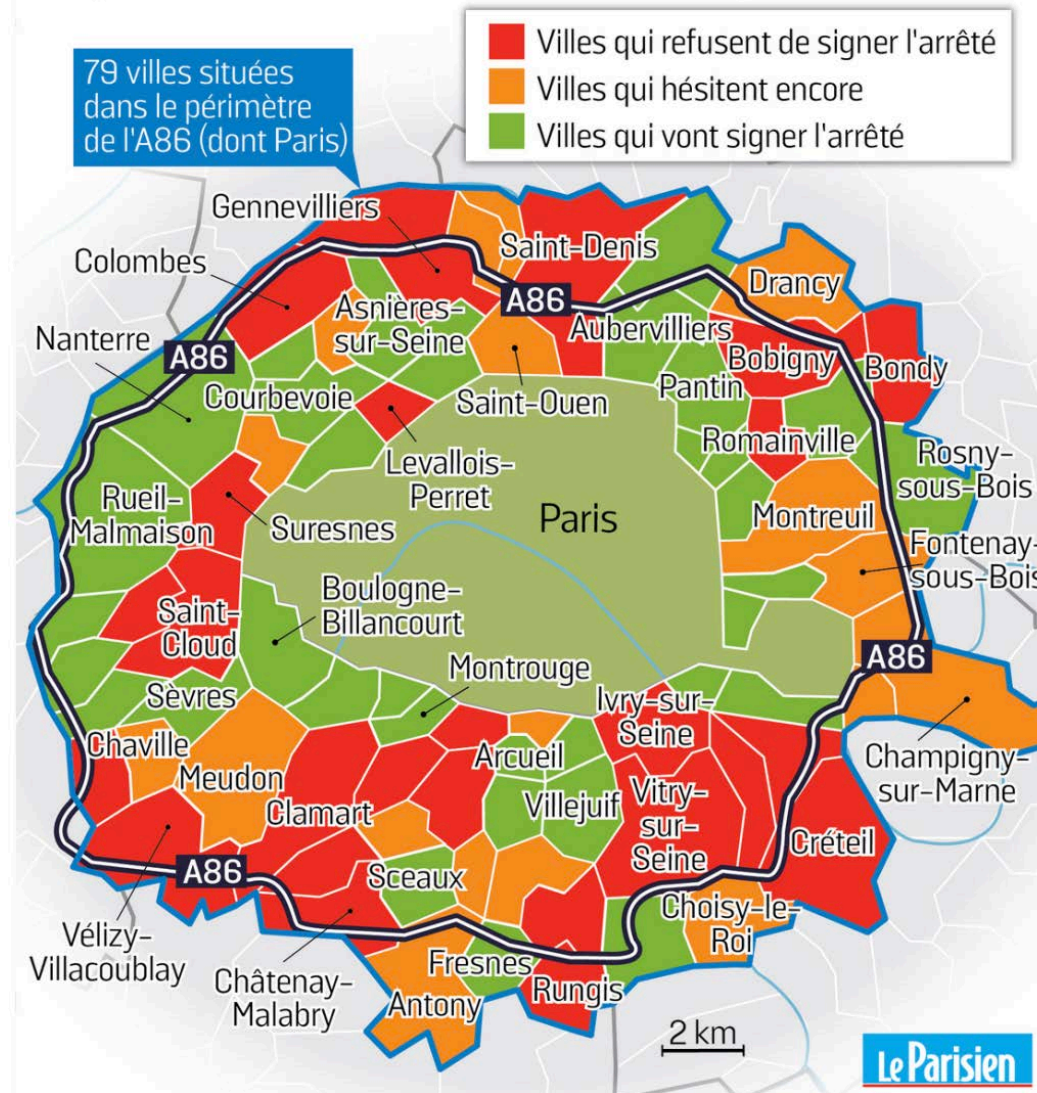
Los Angeles Times

Share of freight in pollutant emissions in the Paris region (Coulombel et al., 2018)

	Total region	Paris	Dense suburbs	Far suburbs
CO2	19.4	33.9	17.6	6.6
PM10	29.6	46.4	27.8	11.3
NOx	29.3	51.4	26.5	9.3

Un-coordinated policies

La position des villes concernées par la ZFE

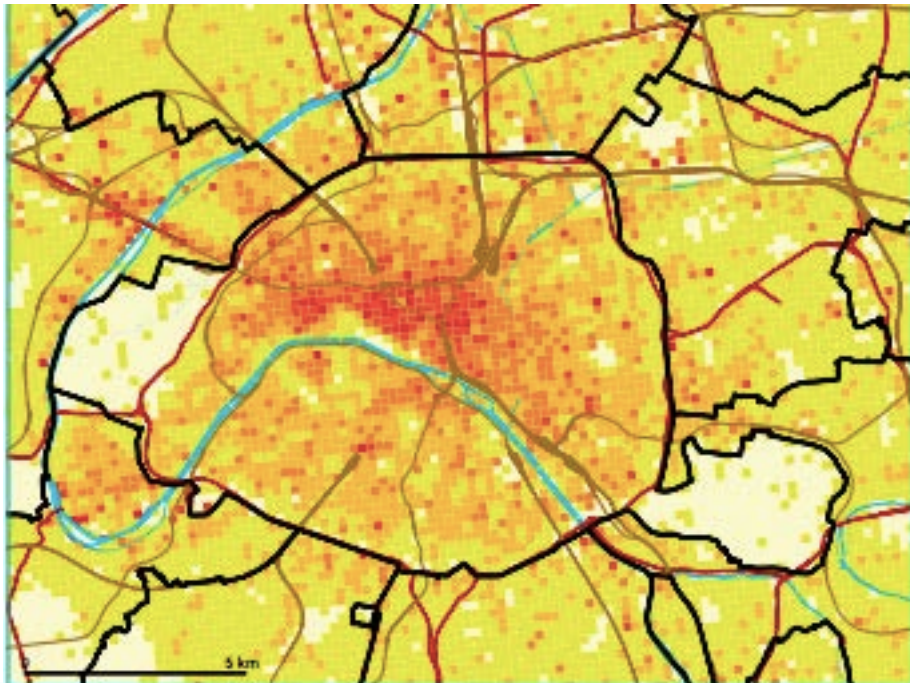


Need for better data and improved urban freight models

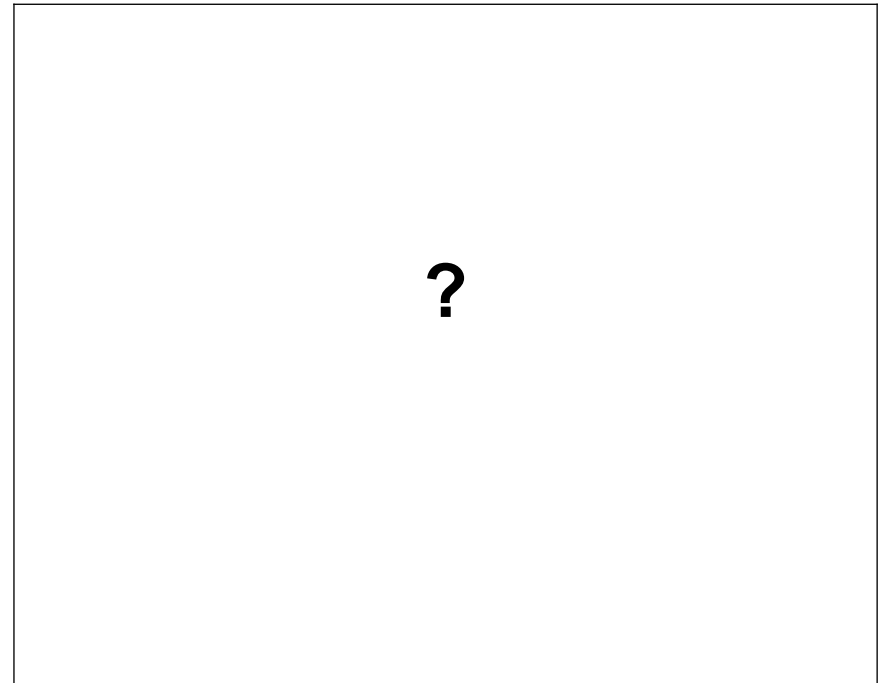
Use of big data and spatial analytics

Delivery trips in Paris

B2B



B2C



Programs promoting city logistics innovation

- 2015 municipal bid for innovative city logistics projects, selection of 22 projects
- 2017: Rolling Lab, an ‘incubator’ building for start-up companies in the logistics sector



Accommodating urban logistics facilities

- ‘Reinvent Paris’: converting former industrial buildings or gas stations into logistics hubs



Porte Champerret
Sogaris project

Chapelle logistics hotel

2016 (project): rental price estimated 100 euros/m²/year



Foncier: 1 ha de toiture

Programme: env. 6 200 m² DEVE et 3 800 m² DJS

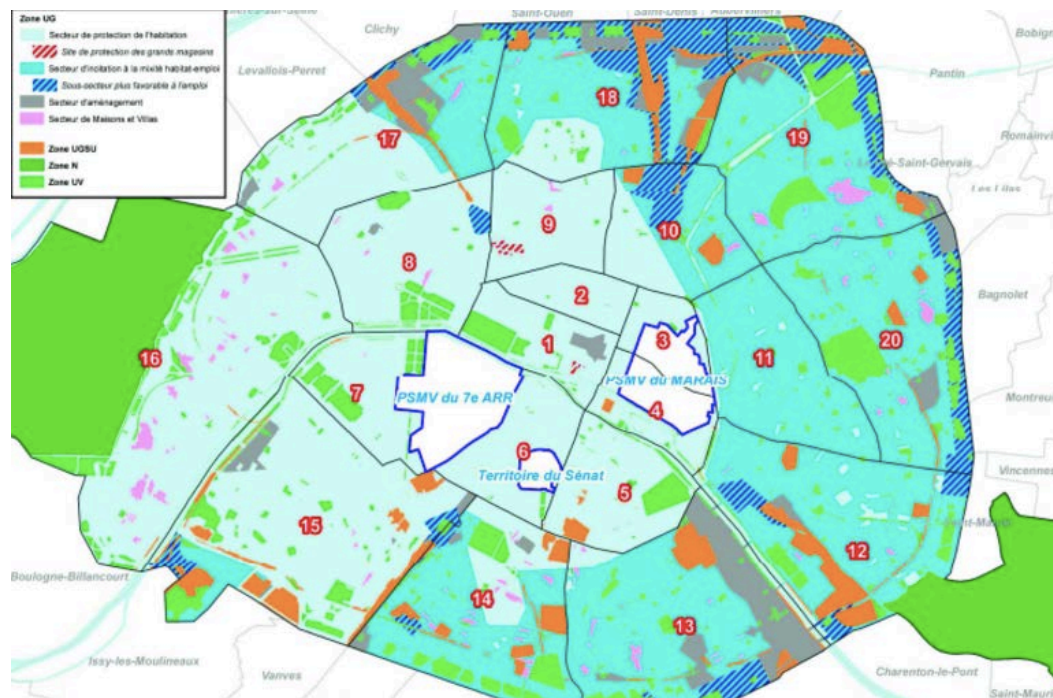
2019: building in full operation

actual rental price 200 euros/m²/year



Freight in the 2016 Paris zoning law

- Logistics buildings in the list of ‘buildings and activities necessary for public services or of collective interest’
- Specific construction standards (height, floor area)



Conclusion Paris

- Urban freight represents many jobs for Paris
- Innovative logistics services are developing
- However, urban freight remains a “low cost, low price” market with huge environmental impacts
- Paris decision-makers implement policies to address part of the issues
- Policies remain very fragmented and ineffective at the regional level
- Many freight and logistics issues depend on the economics or on long-term national policies

Thanks for your attention!

Laetitia Dablanc
laetitia.dablanc@ifsttar.fr

Ivan Sanchez-Diaz
ivan.sanchez@chalmers.se